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MEMORANDUM FOR: NIO/S&T
NIO/SP

24 Sept 86

Gentlemen -- Should we be concerned? Do we need an NIE, or SNIE, or IIM or IIA on this? Or simply incorporate in NIE 11-3-8?

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Sanitized Copy Approved for Release 2011/01/24 : CIA-RDP88T00988R000100010005-6

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IA Operations Center

ews Bulletin : The Washington Post, Page A1

24 September 1986
Item No. 1

Soviets Reportedly Step Up Research to Detect U.S. Subs

By Charles R. Babcock
Washingaon Post Staff Writer

Over the past five years, the Soviet Union has significantly stepped up research efforts to detect U.S. submarines, shifting top scientists from other work to do experiments using space-based radars and other advanced equipment, according to informed sources.

U.S. analysts have identified 13 Soviet scientific institutes working on important antisubmarine warfare (ASW) research, including the five-year-old Institute of General Physics and the Institute of Space Research, officials said. Using public as well as secret sources, these officials also have determined that a number of researchers were switched to ASW research after doing high-energy laser weapons experiments in the 1970s.

One senior intelligence official described the Soviet ASW research as "massive." That effort is known to include experiments using several new techniques other than sound, or acoustic, detection, which is the heart of U.S. ASW efforts. Among them are infrared, electromagnetic and laser sensors, as well as radar on the Soviet space station.

The Soviet research has prompted concern in some U.S. scientific and congressional circles that the Navy is not taking seriously enough the possibility that the Soviets' intense research effort might lead to a technological breakthrough that would make American missile and attack submarines vulnerable.

The U.S. force has been considered undetectable and the safety of the 39 missile subs has been of paramount concern to policy-makers because those subs carry about half of the nation's nuclear missile warheads.

Congress ordered the Central Intelligence Agency to begin a $10 million independent assessment of the ASW issue last year, and in July the House Armed Services Committee recommended that another $10 million be added to the Pentagon budget for further research.

Concerns about a potential Soviet ASW breakthrough have arisen periodically, but Navy officials have quickly dismissed the fears as sniping from other services intent on increasing their share of the nuclear arms budget. The Navy spends about $40 million a year on research to protect missile subs and officials have testified that scientists are convinced that nonacoustic techniques being tried by the Soviets cannot work.

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"A submarine, any submarine, using the proper operational tactics will not generate surface observables which can be imaged by synthetic aperture radar [the space-based radars being studied by the Soviets]," a Navy spokesman said. "There is no realistic possibility that the Soviets will deploy a system in the 1990s that could pose any significant threat to U.S. SSBNs [nuclear ballistic missile submarines] on patrol. U.S. intelligence estimates agree with this assessment."

Navy critics do not claim that the Soviets have developed a new ASW capability, but say the science of the ocean is not understood well enough for the Navy to make the blanket assurances. Some sources said Navy leaders and their contractors are arrogant. "It's the notion that we can't do it and we're smarter than they [the Soviets] are, so they can't do it either," one congressional source said.

Last year's CIA study was put under the direction of Robert Gates, then head of the agency's analysis division and now deputy director of the agency.

Sources said the CIA's office of scientific and weapons research put together a 60-member working group with four subcommittees to study whether space-based radars might be able to read small changes in the ocean's surface caused by movement of submerged submarines. The CIA study group concluded the possibility could not be dismissed because of scientific uncertainties and recommended further study in some areas, the sources said.

Some participants in the CIA study complained that the research might not be independent because Navy personnel and contractors were assigned to the project. And at least three researchers complained earlier this year ago that a draft of the CIA study report was being written to play down the scientific uncertainties, the sources said.

A Navy spokesman said "the Navy has given full support to the CIA study by making available any and all information, including raw exercise data and published final reports . . . ."

The House Armed Services Committee, in what is being called a follow-up to the CIA study, recommended in July that $10 million be added to the Defense Advanced Research Projects Agency (DARPA) budget to conduct "advanced speculative and independent research and experiments" on such topics as "wave propogation, ocean surface physics, radar and infrared imaging, and detection theory."

Such technical jargon hardly conjures up the dramatic image of antisubmarine warfare depicted in Tom Clancy's best-selling novels about undersea chases. But the arcane scientific debate is getting more attention now because of two key factors.

First, the Navy's confidence in the invulnerability of its submarine force has been based on longstanding U.S. expertise in making submarines too quiet for the Soviets to hear, while using sophisticated acoustic equipment to detect noisier Soviet boats. But the Navy acknowledged recently that Soviet subs are becoming quieter and science may be reaching the limits of acoustic detection techniques. Thus some Navy officers are interested in nonacoustic devices for ASW.

In addition, though many experts feel that U.S. missile subs, including the giant Trident, are safe for the foreseeable future because they move slowly and deep in vast expanses of ocean, the Navy also is designing a new attack submarine that some think may be more vulnerable.

The new Seawolf, which will cost $1.6 billion each at first, is much larger than existing U.S. attack subs and is supposed to go after Soviet subs in shallow water near their home bases if war breaks out. Thus some ASW experts, in and out of government, think it might be especially vulnerable to a Soviet ASW breakthrough.

One Pentagon official argued that the Seawolf is less vulnerable than other submarines because the Navy has incorporated its newest technology in the fast attack submarine, including countermeasures for nonacoustic detection.

In recommending the new $10 million study by DARPA, the House committee said, "Clearly, the future success of the SSBN program and the future survivability of the submarine force will depend on the most complete understanding of the phenomenology and technology involved, especially if detection could result from manifestations on the surface of the ocean observable from aircraft or from space.

The committee continues to be concerned that decades of success may lead the U.S. technical community to drift into complacency, overestimating the understanding of the mechanisms by which submarines are detected and failing to follow up on evidence and technical trends that must be understood to maintain confidence that submarines are undetectable from aircraft or space."

One Pentagon official said, "Even if there were a development that allowed a nonacoustic detection, I am confident there is at least an operational counter."

The uncertainties in ocean science are evident in explanations given over the last several years for the narrow wakes spotted by the U.S. SEASAT satellite radar in 1978. It is a well-understood basic fact of physics that moving ships in deep water create wakes 39 degrees wide no matter how fast they are traveling, experts say. But the SEASAT radar photos also showed narrower wakes that have not been satisfactorily explained, even by a group of top scientists who do classified work for the Pentagon.

Navy officials, not surprisingly, are sensitive to any suggestion that they have not done their homework in protecting existing missiles subs or designing the new Seawolf.

Adm. Kinnaird McKee, head of the Navy's nuclear propulsion office, told a House Armed Services subcommittee last September in secret testimony later made public that he was well aware of the issue. "There are those who would have us believe there is a breakthrough coming. Everything is going to be different and the submarine [the Seawolf] is too big . . . . The ocean turns transparent every year at budget time."

McKee referred to news reports about space-based radars and said Navy research "tells me that the notion that you can find a submerged submarine with side-looking radar from space is wrong."

When challenged by Rep. Albert G. Bustamante (D-Tex.), McKee acknowledged that there was a need to do more, "to run all of the experiments we can possibly run to make sure that there isn't something we have overlooked, but so far there has been no light at the end of the tunnel—at all."

Bustamante said in an interview, "We're pushing them [Navy officials] to begin, to advance the research in this area so the Russians don't get ahead of us."